MCF 3M Opener

For the function;

$$f(x) = 2x^2 - 12x - 14$$

What are the zeros?
What is the axis of symmetry i.e. x=?
What is the optimum point of this function?

Feb 11-3:37 PM

MCF 3M Opener

For the function;

$f(x) = 2x^2 - 12x - 14$ A | M

$= 2(x^2 - 6x - 7)$ -6 | -7

$= 2(x^2 - 7x + 1x - 7)$

$= 2(x(x-7) + 1(x-7))$ +1 -7

$= 2(x-7)(x+1)$

What are the zeros? $+7, -1$
What is the axis of symmetry i.e. x=?
What is the optimum point of this function?

$\frac{+7 + -1}{2} = \frac{6}{2} = 3$

$x = 3$

$f(3) = 2(3)^2 - 12(3) - 14$
$= 2(9) - 36 - 14$
$= 18 - 50$
$= -32$

Feb 11-3:37 PM

Section 3.3 p 143

Solving Equations by Graphing

Model Rocket
h(t) =$-5t^2 + 15t + 20$

Solution #1
TI83 - 2ND Trace

i) zeros
ii) vertex max/min

(-1 & 4) zeros

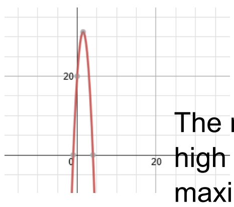
(1.5, 31.25)
h K

20m - initial height

$D = \{t \in R \mid 0 \le t \le 4\}$

$R = \{h(t) \in R \mid 0 \le h(t) \le 31.25\}$

Mar 4-1:56 PM



The rocket is launched off a 20m high building and reaches a maximum height of 31.25m at 1.5 sec. The rocket hits the ground at 4 sec.

Mar 2-8:45 AM

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2) Algebraic

$h(t) = -5t^2 + 15t + 20$

A | M
-3 | -4
-4, +1

$h(t) = -5(t^2 - 3t - 4)$

$h(t) = -5(t - 4)(t + 1)$

4 -1

$x_v = \frac{s+t}{2}$
$= \frac{4 + -1}{2}$
$= \frac{3}{2}$
$= 1.5$

Substitute $x = 1.5$

$h(t) = -5(1.5 - 4)(1.5 + 1)$
$= -5(-2.5)(2.5)$
$= -5(-6.25)$
$= +31.25$

Mar 4-2:17 PM

The rocket reaches its maximum height of 31.25m at 1.5 sec. The rocket hits the ground at 4sec. The rocket is launched from an initial height of 20m.

Mar 4-2:23 PM

ie ROOTS

$\underline{x^2 - 8x + 12} = \boxed{-3}$

$x^2 - 8x + 12 + 3 = -3 + 3$

$x^2 - 8x + 15 = 0 \Rightarrow (x-3)(x-5) = 0$

A | M
-8 | +15

3 & 5 Roots of (-3)

(3,-3) (5,-3)

vertex (4,-1)

Mar 4-2:25 PM

P147

The population of an Ontario city is modelled by the function $P(t) = 0.5t^2 + 10t + 300$, where $P(t)$ is the population in thousands and t is the time in years. *Note*: $t = 0$ corresponds to the year 2000.

a) What was the population in 2000?
b) What will the population be in 2010?
c) When is the population expected to be 1 050 000?

Mar 2-7:17 AM

$P(t) = 0.5t^2 + 10t + 300$ p147

P(t) = measured in thousands

t = time in years t = 0 year 2000

At year 2000 = 300 000

At year t=10 or 2010 = 450 000

Population reaches 1050 or 1 050 000 at year 2030 (t=30)

Mar 4-2:35 PM

$1050 = 0.5t^2 + 10t + 300$

$0 = 0.5t^2 + 10t + 300 - 1050$

$0 = 0.5t^2 + 10t - 750$

$0 = 0.5(t-30)(t+50)$

The population will reach 1 050 000 at t=30 (or year 2030) and at 1950.

p. 149-151

q 2,3,4 odds 5ab, 6, 8,9, 10*

Mar 5-10:37 AM

Sep 30-10:28 AM